REMARKS

Applicants respectfully request entry of the foregoing and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.112, and in light of the remarks which follow.

Claims 22-25, 27-34, 36-44 and 46-48 are pending in the application, claim 45 having been canceled above and claims 46-48 having been added above.

By the above amendments, claims 22, 41 and 43-44 have been amended by replacing "comprising" with --consisting essentially of-- so that the claims read, in part, "the process consisting essentially of." Claims 43-44 are further amended to address the §112 issue. Additionally, new claims 46-48 have been added to further define exemplary embodiments of the invention. Support for new claims 46-48 can be found at least at the previous versions of claims 22, 41 and 45 and at page 3, line 21 to page 5, line 7 of the specification.

Turning now to the Official Action, claims 43 and 44 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not adequately described in the specification. Applicants have amended claims 43-44 to obviate the rejection. In particular, Applicants have amended these claims to recite specific chemical formulae. Support for this amendment can be found at least at page 11, line 15 to page 12, line 5 of the specification.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 22, 24, 25, 27-30, 32, 41 and 43-45 stand rejected under 35 U.S.C. §102(b) as being anticipated by or in the alternative as being obvious over Jachmann et al. (U.S. Patent No. 5,187,251). Additionally, claims 34 and 36-38 stand rejected under 35 U.S.C. §102(b) as being anticipated by Jachmann and claims 23, 30, 31, 33, 39, 40 and 42 stand rejected under 35 U.S.C. §103(a) as having been obvious over Jachmann. For at least the reasons that follow withdrawal of these rejections is in order.

The presently claimed invention is directed to a novel process for the preparation of functionalized silicone oils having at least one hydrocarbon-containing ring in which is included in oxygen atom. In particular, the subject matter of the present invention relates to a process for hydrosilylation between polyorganohydrosiloxanes and unsaturated units including at least one hydrocarbon-containing ring having an oxygen atom. Some of the advantages associated with the claimed process include the formation of a polyorganosiloxane having a stable viscosity and being non-turbid.

For example, independent claim 22, as amended, sets forth a process for the preparation of a non-turbid, functionalized silicone oil of stable viscosity, the process consisting essentially of hydrosilylating a polyorganohydrosiloxane with synthons. The synthons being hydrosilylated with the polyorganohydrosiloxane being different or identical, and comprising at least one hydrocarbon-comprising ring in which is included at least one oxygen atom. The hydrosilylation reaction is carried in the presence of a heterogeneous catalytic composition comprising a metal selected from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, said inert support selected from the group consisting of carbon black, charcoal, alumina, silicate and

barium oxide. Further, the polyorganohydrosiloxane is linear or cyclic and has a specified mean formula.

Jachmann relates to curable polyorganosiloxanes having epoxy groups. The invention of Jachmann also relates to a method for synthesizing these curable polyorganohydrosiloxanes having epoxy groups and of the use thereof as curable coating materials with adhesive properties, as casting compositions and as coating materials for glass fibers. See Jachmann at column 1, lines 9-15.

It is well established that in order to demonstrate anticipation under 35 U.S.C. §102(b), each element of the claim in issue must be found, either expressly described or under principles of inherency, in a single prior art reference. See Kalman v. Kimberly - Clark, 218 USPQ 789 (Fed. Cir. 1983). Furthermore, to determine obviousness under §103, the invention, considered as a whole, must be suggested and obvious in view of the asserted art. See Hodosh v. Block Drug Co., Inc., 229 USPQ 182 (Fed. Cir. 1986). That is not the case here.

Additionally, Applicants submit that "it is impermissible within the framework of §103 to pick and choose from any one reference only so much as it will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." See In re Wesslau, 147 USPQ 391 (CCPA 1965). In view of this well-established principle, Applicants submit that numerous portions of Jachman discussed below lead away from a conclusion of obviousness and therefore cannot be ignored.

Applicants submit that Jachmann fails to disclose or fairly suggest a process consisting essentially of the steps defined in claims 21, 41 and 43-44. In particular, Example 1 at column 10 of Jachmann discloses a one pot synthesis of a bifunctional organosiloxane. All of the components in Example 1 are added dropwise and the vinyl cyclohexene oxide and allyl alcohol are added before the organopolysiloxane. Further, Applicants submit that it is well known in silicone chemistry that the reactivity of an allyl group is similar to the reactivity of a vinyl group. Accordingly, both groups could react with the reactive site of the polyorganosiloxane. That is, the reaction mechanism of the synthesis described in Example 1 cannot be readily determined because the ingredients are added prior to the addition of the organohydropolysiloxane.

For at least these reasons, Applicants submit that the process of Jachman, as set forth in Example 1, does not disclose or fairly suggest the processes of independent claims 22, 41 and 43-44. Additionally, Applicants submit that the final product of the synthesis of Example 1 of Jachmann is a bifunctional organopolysiloxane. Thus, Applicants submit that Jachmann discloses a one-step synthesis of a bifunctional oranopolysiloxane instead of a synthesis of a monofunctional organopolysiloxane, as defined in the processes of claims 22, 41 and 43-44.

Additionally, Example 10 of Jachmann at column 14, discloses a vinylcylohexene oxide mixed with methallyl alcohol and polydimethylsiloxane. Thus, Applicants submit that Example 10, like the process of Example 1, requires the addition of two reactants to the organopolysiloxane to obtain a monofunctionalized organopolysiloxane. In contrast, the processes of claims 22, 41 and 43-44 add a single reactant to the organopolysiloxane to obtain the end product. Therefore, in view of Example 10, Applicants submit that one of ordinary

skill in the art would not have been be motivated to arrive at the presently claimed invention. That is, one having read Example 10 would have been motivated to use two reactants and an organohydropolysiloxane to obtain the end product. Thus, Applicants submit that Example 10 of Jachmann actually teaches away from the claimed processes because Example 10 suggests the need for an additional reactant to produce the end product.

Furthermore, in column 4, lines 44-48, Jachmann discloses that "aside from epoxy groups which are linked by way of Si-C bonds with silicon atoms of the polysiloxane, groups having the formula-R_3OH must be present. (emphasis added). This fact is well illustrated by Examples 1 and 10, which indeed disclose that reactants having R_3OH must be present.

For at least these reasons, the processes of claims 22 and 41-44 are neither anticipated nor rendered obvious by Jachmann. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Claims 22, 24-25, 27-32, 34, 36-41 and 43-45 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Koshar (U.S. Patent No. 4,313,988) in view of Chandra (U.S. Patent No. 4,064,154) or Jachmann. For at least the reasons that follow, withdrawal of the rejection is in order.

Koshar relates to cured epoxy polysilyloxanes and their blends with epoxy-terminated silanes which are useful as release coatings for adhesive roll and sheet materials. See Koshar at column 1, lines 10-13.

Koshar does not disclose or fairly suggest each feature of the presently claimed invention. For example, the disclosure at page 3, line 21 to page 4, line 8 of the specification states "synthons comprising a ring in which is included an oxygen atom (epoxide, and the like)

... during the devolatilization stage has a tendency to open and to cause uncontrolled polymerization and crosslinking reactions (formation of gum and/or of resin) of the functionalized oils which are initiated by the presence of traces of the usual catalytic compositions such as homogeneous compositions ... ." Clearly, this probelm is damaging to the effectiveness of the process for making functionalizeed silicone oils and is specific to the process of the present invention because it is caused by the presence of synthons having a ring including an oxygen atom. Therefore, this problem does not affect all hydrosilylation reactions. Koshar, however, is completely silent about this problem and only discloses using standard, non-heterogeneous, catalysts. The Official Action itself admits that Koshar fails to disclose or suggest using a heterogeneous catalyst. See Official Action at page 4. Thus, Applicants submit that the process of the present invention is neither disclosed nor suggested by Koshar.

Chandra also fails to address the problem of undesired by-product production during devolatilization. That is, Chandra states that the disclosed catalyst is "easily removed" from reaction residues by decantation or filtration. See Chandra at column 4, lines 65-68. Applicants submit that reaction residues are normally considered waste. Thus, Applicants submit that Chandra is directed to recovering an expensive chemical (the catalyst) from waste generated by a hydrosilylation reaction. Nowhere does Chandra disclose or suggest that the disclosed catalysts would have any effect on a reactant in a hydrosilylation reaction. Furthermore, Chandra fails to disclose or even suggest the specific class of epoxy-functionalized polyorganosiloxanes produced by the processes of the present invention.

Moreover, even if one were to assert that minimized by-product production would be inherent in the asserted combination, Applicants submit that this would not be a basis for a proper obviusness rejection. That is, the inherency of an advantage and its obviousness are entirely different questions. That which may be inherent is not necessarily known. Obviousness cannot be predicted on what is unknown. See In re Shetty, 195 USPQ 753, 756-757 (CCPA 1977). In particular, "inherency is quite immaterial if ... one of ordinary skill in the art would not appreciate or recognize the inherent result." See In re Rijckaert, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). Clearly, neither Koshar nor Chandra, alone or in combination, appreciate or recognize that a heterogenous catalyst can reduce the formation of undesired by-products during a devolatilization stage of a hydrosilylation reaction.

Applicants also submit that the question under §103 is not whether the differences between the prior art and the claims would have been obvious, but whether the claimed invention as a whole would have been obvious. MPEP §2141.02. Accordingly, Applicants submit that the question in the present case should be whether the claimed processes using synthons comprised of a ring in which is included an oxygen atom (epoxyde and the like) and a heterogeneous catalyst in a hydrosilylation reaction would have been obvious in view of the cited art. Applicants submit that it would not have been obvious. That is, none of the cited references, alone or in combination, address the problem of undesired by-products (gums and/or resins) produced during a devolatilization stage of a hydrosilylation of synthons having an epoxyde (or the like) ring. Thus, a proper assessment of the non-obviousness of the present invention must include consideration of the fact that the use of the claimed heterogeneous

catalyst with the recited epoxyde-ring synthons minimizes the production of undesired by-products (gums and/or resins) during devolatilization.

Finally, Jachmann, for at least all of the reasons discussed above, also fails to disclose or fairly suggest modifying the process of Koshar to arrive at the process defined in independent claims 22, 41 and 43-44.

For at least these reasons, the presently claimed invention would not have been obvious over the combination of Koshar in view of Chandra or Jachmann. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Finally, Applicants have added new claims 46-48 to further define exemplary embodiments of the present invention. Applicants submit that these claims are also patentably distinguished from the cited prior art.

Applicants earnestly solicit further and favorable action in the form of a Notice of Allowance.

If there are any questions concerning this paper or the application in general, Applicants invite the Examiner to telephone the undersigned at the Examiner's earliest convenience.

Respectfully submitted,

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Date: April 4, 2003

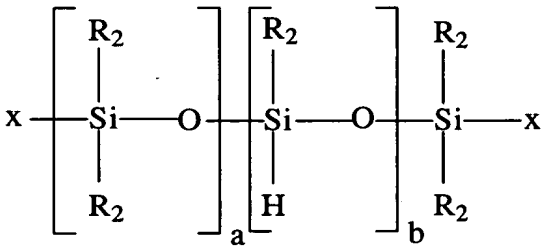
Attachment to AMENDMENT dated April 4, 2003
Mark-up of Claims 22, 41, and 43-44

22. (Twice Amended) Process for the preparation of a nonturbid, functionalized silicone oil of stable viscosity, the process [comprising] consisting essentially of: hyrosilylating polyorganohydrosiloxane with synthons wherein:

(1) the synthons hydrosilylated with the polyorganohydrosiloxane are different or identical, comprising at least one hydrocarbon-comprising ring in which is included at least one oxygen atom,

(2) said hydrosilylation reaction is carried out in the presence of a heterogeneous catalytic composition comprising a metal selected from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, said inert support selected from the group consisting of carbon black, charcoal, alumina, silicate and barium oxide, and

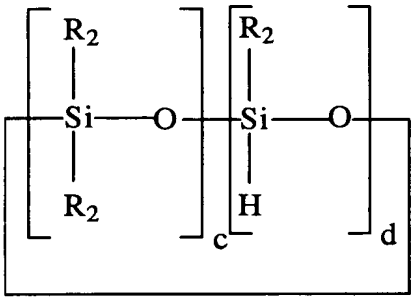
(3) the polyorganohydrosiloxane is linear or cyclic and has the mean formulae:



(XVI)

and/or

Attachment to AMENDMENT dated April 4, 2003
Mark-up of Claims 22, 41, and 43-44



(XVII)

in which:

- the symbols R_2 are identical or different and correspond to a monovalent hydrocarbon-comprising radical chosen from the phenyl radical and linear or branched alkyl radicals having from 1 to 6 carbon atoms;
- the symbols x are identical or different and correspond to a monovalent radical chosen from R_2, a hydrogen atom, a methoxy radical and an ethoxy radical;
- a and b are integers or fractions, such that:

  - $0 < a \leq 200$,

  - $0 \leq b < 200$,

  - and at least one of the two x groups corresponds to the hydrogen radical if $b = 0$,

  - $5 < a + b \leq 200$;

- c and d are integers or fractions, such that:

  - $0 < c < 5$,

  - $1 < d < 10$,

Attachment to AMENDMENT dated April 4, 2003
Mark-up of Claims 22, 41, and 43-44

$-3 < a + b < 10$.

41. (Twice Amended) A process for the preparation of functionalized silicone oils which are stable and nonturbid, [comprising] the process consisting essentially of providing a heterogeneous catalytic composition comprising a metal selected from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, said inert support being selected from the group consisting of carbon black, charcoal, alumina, silicate and barium oxide and hydrosilylating a polyorganohydrosiloxane with synthons in the presence of the catalytic composition wherein the synthons are different or identical and comprise at least one hydrocarbon-comprising ring in which is included at least one oxygen atom.

43. (Amended) Process for the preparation of a nonturbid, functionalized silicone oil of stable viscosity, the process [comprising] consisting essentially of: hyrosilylating polyorganohydrosiloxane with synthons wherein:

(1) the synthons [hydrosilylated with the polyorganohydrosiloxane are different or identical, comprising at least one hydrocarbon-comprising ring in which is included at least one oxygen atom, with the proviso that the synthon is not a hydroxylated synthon] have a formula selected from the group consisting of:

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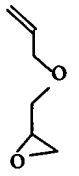
Mark-up of Claims 22, 41, and 43-44



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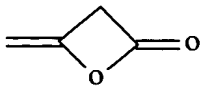

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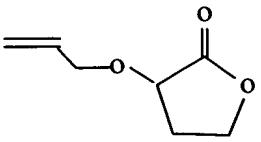

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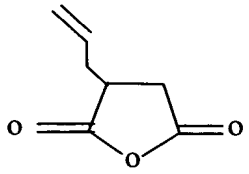

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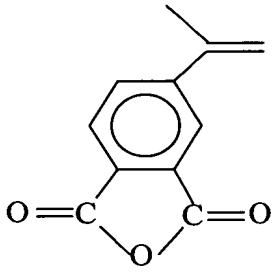

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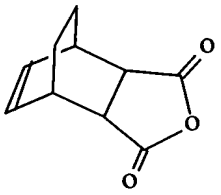

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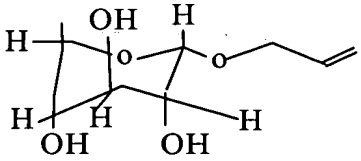

(XV)

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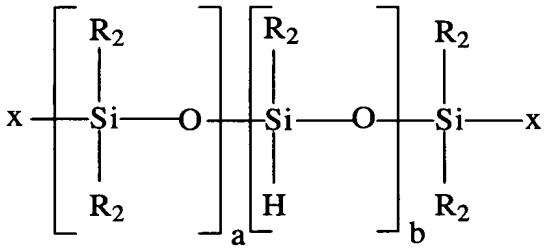
Mark-up of Claims 22, 41, and 43-44

(2) said hydrosilylation reaction is carried out in the presence of a heterogeneous catalytic composition comprising a metal selected from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, said inert support selected from the group consisting of carbon black, charcoal, alumina, silicate and barium oxide, and

(3) the polyorganohydrosiloxane is linear or cyclic and has the mean formulae:



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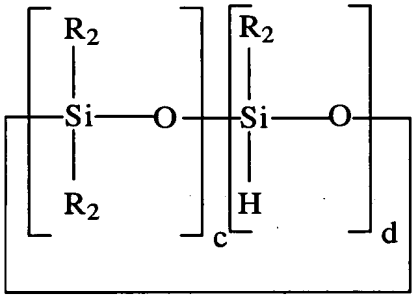
and/or



(XVII)

in which:

- the symbols R_2 are identical or different and correspond to a monovalent hydrocarbon-comprising radical chosen from the phenyl radical and linear or branched alkyl radicals having from 1 to 6 carbon atoms;

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Mark-up of Claims 22, 41, and 43-44

- the symbols x are identical or different and correspond to a monovalent radical chosen from R_2, a hydrogen atom, a methoxy radical and an ethoxy radical;
- a and b are integers or fractions, such that:

  - $0 < a \leq 200$,

  - $0 \leq b < 200$,

  - and at least one of the two x groups corresponds to the hydrogen radical if $b = 0$,

  - $5 < a + b \leq 200$;

- c and d are integers or fractions, such that:

  - $0 < c < 5$,

  - $1 < d < 10$,

  - $3 < a + b < 10$.

44. (Amended) A process for the preparation of functionalized silicone oils which are stable and nonturbid, [comprising] the process consisting essentially of providing a heterogeneous catalytic composition comprising a metal selected from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, said inert support being selected from the group consisting of carbon black, charcoal, alumina, silicate and barium oxide and hydrosilylating a polyorganohydrosiloxane with synthons in the presence

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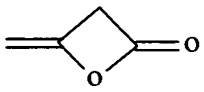
Mark-up of Claims 22, 41, and 43-44

of the catalytic composition wherein the synthons are different or identical and have a formula selected from the group consisting of:


(VII),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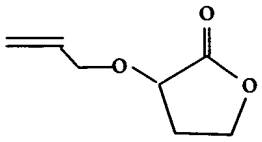
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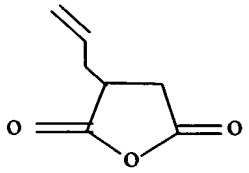
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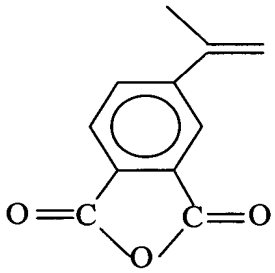
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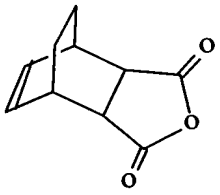
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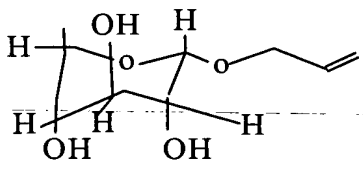
(XV).

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Mark-up of Claims 22, 41, and 43-44

[comprise at least one hydrocarbon-comprising ring in which is included at least one oxygen atom, with the proviso that the synthon is not a hydroxylated synthon].